

## WHAT IS CLAIMED IS:

1. A mechanical fuse composed of Fe-based sintered alloy.
2. The mechanical fuse in accordance with claim 1, wherein the  
5 roundness of pores of the Fe-based sintered alloy is 0.004 or more.
3. The mechanical fuse in accordance with claim 1, wherein an iron  
oxide phase is formed in a surface layer and pore inner wall.
4. The mechanical fuse in accordance with claim 1, wherein at least  
one of Ni, Cu, Mo, Cr, and Mn is contained by 0.7 to 5 mass %, and the C  
content in overall composition is 0.1 to 0.7 mass %.
5. The mechanical fuse in accordance with claim 1, wherein a  
treatment for providing residual compressive stress is applied.
6. The mechanical fuse in accordance with claim 5, wherein the  
treatment for providing residual compressive stress is shot peening.
7. The mechanical fuse in accordance with claim 5, wherein the  
20 treatment for providing residual compressive stress is mechanical plating.
8. The mechanical fuse in accordance with claim 1, wherein a soft  
nitriding treatment is applied.

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9. The mechanical fuse in accordance with claim 1, wherein a zinc chromate film is coated on the surface.

10. The mechanical fuse in accordance with claim 1, wherein this  
5 mechanical fuse is interposed between two power transmission shafts and comprises an inner rim fixed to one power transmission shaft, an outer rim fixed to the other power transmission shaft, and plural arms for linking the inner rim and outer rim, which are formed integrally.

11. A manufacturing method of mechanical fuse comprising:  
a compression step for compressing a mixed powder of iron powder, and nickel powder, copper powder, molybdenum powder, ferromanganese powder, or ferrochromium powder so that the content of at least one element of Ni, Cu, Mo, Cr, and Mn, is 0.7 to 5 mass %, and  
15 graphite powder so that the C content is 0.1 to 0.7 mass %, into a specified shape; and  
a sintering step for sintering the green compact obtained at the compression step, in a non oxidation atmosphere.

20 12. The manufacturing method of mechanical fuse in accordance with claim 11, wherein the sintering step is followed by a steam treating step for treating the sintered compact in steam.

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13. The manufacturing method of mechanical fuse in accordance with claim 11, wherein the sintering step or steam treating step is followed by a soft nitriding step.

5 14. The manufacturing method of mechanical fuse in accordance with claim 11, wherein a compressive residual stress is provided among or after the sintering step, steam treating step, or soft nitriding step.

10 15. The manufacturing method of mechanical fuse in accordance with claim 11, further comprising a final step for laminating a film of zinc or zinc-iron alloy flaky particles on the surface by mechanical plating, immersing in an aqueous disperse solution containing metal zinc flakes, chromic acid anhydride, and glycol, and heating to coat the surface with a zinc chromate film.

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